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SELECTED COSTS OF PRODUCE WHOLESALING
IN OLD AND MODERN FACILITIES, BOSTON, MASS.

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PREFACE

Over the past 30 years many new food distribution centers have been constructed as a result of studies conducted by the U.S. Department of Agriculture. This study which could be called "Boston Revisited," is a followup study made to obtain a cost comparison between operations in outmoded facilities in the early 1960's with operations in the New England Produce Center in 1970.

The authors wish to express their appreciation to the wholesalers participating in the study, and Roger Pevear, manager, and John Cameron, assistant manager of the New England Produce Center who assisted in making arrangements for the data collection.

This study was conducted under the general supervision of Kenneth H. Brasfield, Chief, Food Distribution Research Laboratory, ARS.

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SELECTED COSTS OF PRODUCE WHOLESALING IN OLD AND MODERN FACILITIES, BOSTON, MASS.

By James J. Karitas and Marvin D. Volz 1/

SUMMARY

This study compares certain costs of produce wholesaling on the New England Produce Center in 1970 with costs that would have occurred if the dealers were still operating from the facilities they occupied in the early 1960's. This study indicates that if the selected wholesalers had not moved to modern facilities, costs would have increased about \$1.8 million annually or \$5.93 per ton.

These cost changes ranged from an annual increase of \$39,761 in rent to an annual decrease of \$876,068 in handling costs. Of the higher costs, about 81 percent or \$4.80 per ton would have resulted in higher wholesale costs and about 19 percent or \$1.13 per ton in higher costs to shippers, transportation companies, and retailers. Depending on the type of wholesaler and the services offered, the increased wholesaler cost could amount to as much as 20 percent of the wholesale gross margin. The increased costs would probably have been reflected in higher wholesale and retail prices.

INTRODUCTION

Many food wholesalers operate in inefficient facilities located in sections of urban areas earmarked for eventual renewal or redevelopment. Others operate from facilities which preclude the use of modern handling methods and equipment and efficient operations. Rising wage rates, congestion, and increasing distribution costs are forcing many firms to critically appraise their position. To help improve this situation, the U.S. Department of Agriculture has conducted studies of food marketing facilities in more than 65 cities throughout the United States. These studies led to the development and construction of food distribution centers in more than one-half of these cities. Some wholesale firms that had relocated in these centers improved labor productivity because of specially designed facilities, the adoption of better handling methods, and the use of mechanized handling equipment. Others, however, did not realize full benefits because of their failure to improve handling procedures.

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This study was designed to measure the costs of handling produce in a modern food center compared with the costs of operating in old outmoded facilities. The approach used was to compare selected present costs in new facilities with similar costs in the old facilities using adjusted wage rates and rental costs.

These findings may help wholesalers faced with relocation to obtain a measure of the benefits to be derived from locating in a modern food distribution center. The data will also provide a basis for making cost projections for food distribution centers planned for other cities.

The information collected in 1961 to help determine the feasibility of constructing a produce distribution center for Boston was examined to determine the parameters of this study. The following information was then selected for the comparisons:

1. Volume of business in tons.
2. Amount of floorspace.
3. Rent.
4. Labor handling costs.
5. Equipment costs.
6. Entrance fees, cartage, and piggyback transfer costs.
7. Insurance on contents.
8. Avoidable delays.
9. Spoilage.

A sample of 10 wholesalers located on the New England Produce Center, representing the kinds of produce operations typically found in urban food distribution centers, were selected for detailed study. The wholesalers located on the New England Produce Center were chosen for the study because they use modern handling and storage methods, and the data from operations in their old facilities were available. Included in the sample were general line and specialty wholesalers, tomato and celery repackers, and carlot receivers. Interviews were conducted with these wholesalers to obtain data comparable to that obtained from these same wholesalers in 1961.

To compare present day handling costs with costs for similar functions performed in 1961, the 1970 wage rate of \$4.21 per hour was applied to the man-hour requirements. For example, an operation requiring one man-hour per ton in 1961 but with improved methods, one-half hour in 1970 would cost \$4.21 per ton in the old facility and \$2.11 in the new facility.

The data presented were collected from each of the 10 wholesalers on a confidential basis. Therefore, to prevent disclosure of individual firms' business volume or other costs, the data are presented in summary form.

DEVELOPMENT OF MODERN FACILITIES FOR PRODUCE WHOLESALING

To better understand the cost comparisons, the first part of the report discusses facilities and methods used for handling produce in Boston in both

the old and the new facilities and briefly discusses the development of the new facilities. The second part deals in costs.

The Old Produce Markets

In 1961 there were three major market areas in Metropolitan Boston where wholesale food operations were located: Faneuil Hall-Quincy Market, South Boston, and Charlestown (fig. 1). In addition to these major market areas, there were 28 individual fresh fruit and vegetable wholesalers located throughout the metropolitan area.

Faneuil Hall-Quincy Market

The Faneuil Hall-Quincy Market was located in the hub of Boston, approximately one-half mile from City Hall and the downtown shopping area. The market contained 273 wholesale food firms, including 104 fruit and vegetable wholesalers. The Union Freight Railroad provided limited access to the market. Direct rail service was limited to stores and wharves along Atlantic Avenue. Most wholesalers receiving commodities by rail used team tracks located either in South Boston or Charlestown.

South Boston

Forty-three fruit and vegetable dealers were located in South Boston in or near the Boston Market Terminal. The Boston Market Terminal, also called the BMT, was formed in 1929 when three freight houses in South Boston owned by the New Haven Railroad were converted into wholesale food marketing facilities. These three freight sheds, together with the adjacent team tracks, were used for receiving and wholesaling fresh fruits and vegetables. Some of the multiple- and single-story warehouse buildings surrounding the original sheds had been taken over by various firms engaged in the handling of food commodities. These included grocery firms, fruit and vegetable firms, a frozen food firm, food chain warehouses, coffee roasters, and extract and spice merchants.

The Boston Market Terminal was the primary receiver of fresh fruits and vegetables in the Boston area. Formerly owned and operated by the New Haven Railroad, it later became a closed corporation consisting of fresh fruit and vegetable receivers operating in the terminal.

Charlestown

The third market area for fruits and vegetables was Charlestown. There were 12 wholesalers in Charlestown, 10 of which handled only potatoes exclusively.

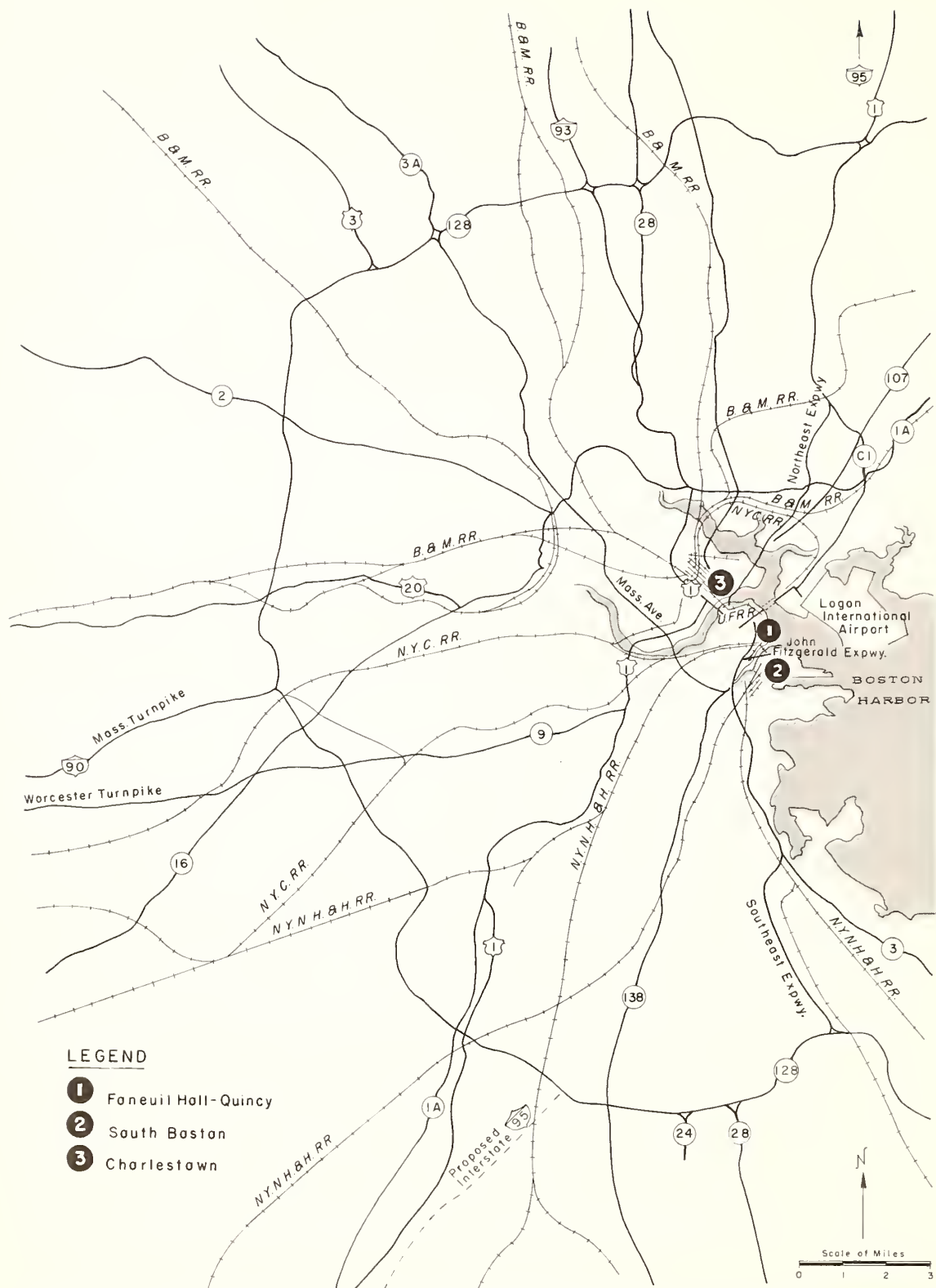


Figure 1.--Location of the Faneuil Hall-Quincy, South Boston, Charlestown market areas, the major highways, the railroads, and the international airport, Boston, 1961.

Most firms were served by house tracks or by team tracks provided by the Boston and Maine railroad. The 10 potato firms were located in sheds of wooden frame construction. Their costs of operation were relatively low because only one commodity was handled. ^{2/}

Major Defects in the Wholesale Food Market

The principal defects found in the Boston wholesale food market in 1961 were: (1) Wholesale facilities scattered in a number of locations (a split market); (2) facilities not adaptable to food handling; (3) inadequate rail service; and (4) no overall organization to establish regulations. These defects, which affected the cost of handling food through the market, were due largely to the fact that the market grew from a colonial farmers' market in Faneuil Hall without guidance or direction. As changes occurred in the production, consumption, and modes of transportation, various food wholesalers and other groups attempted to cope with the changing needs of marketing. The attempts were largely unsuccessful because of local conditions and lack of leadership. These defects were costly not only to the buyers and sellers who used the market, but to the city of Boston, the consumers, the growers, and the shippers.

In addition to these defects, produce wholesalers had some unique problems which resulted in inefficiency and high costs. Examples of these costs were congestion, poor handling practices, and cartage. Illustrative of this congestion is a photograph of the Faneuil Hall-Quincy Market area taken in 1937 (fig. 2).

In addition to market congestion, some produce wholesalers operated from antiquated facilities with multifloor or basement operations. Many had inadequate or no platforms, requiring much hand labor for transferring product from trucks to sidewalks. In some instances, merchandise was

^{2/} For a more detailed description of these markets, see Taylor, Earl G. Boston wholesale food distribution facilities, U.S. Dept. Agr. Market. Res. Rpt. No. 732. 1965.



Figure 2.--Faneuil Hall-Quincy Market looking west toward Faneuil Hall, 1937.

transferred by conveyors to basements (fig. 3). Hand stacking of product was typical (fig. 4). Poor storage layouts and inadequate space for the existing volume of business served to increase costs. Wholesalers who lacked refrigeration were forced to use refrigerated railcars for storage, which added to demurrage charges. Many wholesalers maintained facilities in several markets, thus experiencing high costs because of duplication of labor, facility, management, and cartage costs. Wholesalers also incurred considerable costs because of carting or hauling products from team tracks to their place of business. Wholesalers buying from other wholesalers also experienced high costs for obtaining and hauling products from other locations.



Figure 3.--Basement operations involved extra handling of product.



Figure 4.--Hand-stacked produce in old wholesale facilities.

Development of Modern Facilities

Food wholesalers became more and more concerned as increasing volume placed additional strain on their facilities. Early in 1948, leaders in the fruit and vegetable and the meat industries, along with local government officials, requested the U.S. Department of Agriculture to make a study of the Boston food marketing facilities. The Department undertook the study in 1949 and recommended the construction of a food distribution center for Boston where fruits, vegetables, meat, poultry, and other foods could be brought by rail and truck from every State in the nation, handled in modern facilities, and quickly and efficiently distributed to retailers throughout New England.

Some of the facilities recommended were built shortly thereafter when an expressway split the Faneuil Hall-Quincy Market area displacing several meat firms. These market facilities were developed by the Massachusetts Wholesale Food Corporation in conjunction with the New Haven Railroad. They were located about 2 miles from the Faneuil Hall-Quincy Market in the Dorchester section of South Boston. This area was located on a site recommended in the Department of Agriculture report and became known as "Newmarket."

Although the new development served temporarily to reduce the pressure for change in the Faneuil Hall-Quincy Market area, Boston's food distribution problems were not solved. The formation of the Downtown Waterfront Renewal Project in 1962, a joint undertaking of the Boston Redevelopment Authority and the Boston Chamber of Commerce, provided the impetus to move the remainder of the food merchants from the Faneuil Hall area. Many of the industry leaders welcomed these developments as the means of accomplishing what they had long recognized to be necessary for the welfare of the Boston area. The USDA continued to work with industry and city officials to bring about needed changes.

By this time, much of the land around the "Newmarket" in the area recommended for a food distribution center in 1949 had been taken for non-food uses. So the Department was asked to up-date its earlier study. The report on this new study recommended the kinds and number of facilities needed and the space required and evaluated six possible sites.

Shortly after the recommendations were presented, leaders in the produce industry began work to get new facilities developed. They held meetings, evaluated sites, and enlisted the help of financial institutions, civic organizations, city officials, engineering firms, and legal consultants. They determined that the industry should own the new facilities and chartered a corporation, in which the stock is owned by the tenants. Their efforts resulted in the construction of new produce facilities in the Everett-Chelsea area, on one of the Department-recommended sites. Eight Boston-based banks and insurance companies joined with the Small Business Administration to provide the \$6,750,000 needed to finance the new facilities.

The New England Produce Center

The New England Produce Center, Inc., opened for business on February 26, 1968. Labeled the "Easy Come, Easy Go" market, the center is convenient to both U.S. Route 1 and U.S. Route 1A, the Revere Beach Parkway, Interstate 95, the John Fitzgerald Expressway, and the Maurice Tobin Bridge. An aerial view of the market is shown in figure 5. Soon after the opening of the new



Figure 5.--The New England Produce Center includes the four buildings and facilities in the foreground. The building and facilities at the rear are owned by the new Boston Market Terminal, Boston, 1972.

produce center, the Boston Market Terminal moved to Everett-Chelsea, adjacent to the New England Produce Center facilities. Several grocery firms formerly located in the Faneuil Hall-Quincy Market area also relocated in the vicinity.

Located on about 37 acres of land, the market is comprised of four buildings containing 130 units. The units are 25 feet wide and 100 feet deep including 15-foot front and 14-foot rear covered platforms. The interior space measures 24 by 70 feet. Ceilings are 20 feet high, allowing for three high pallet racks, and the interior space is free from columns (fig. 6).



Figure 6.--Stacking full pallets helps to more fully utilize available storage space.

Office space is provided on a 16-foot wide mezzanine that extends along the front of the building over the interior order staging area.

Front platforms 48 inches above ground level facilitate truck loading, and the rear platforms 55 inches above the top of the rail facilitate unloading from refrigerated railcars. With the use of dockplates these heights allow for the use of modern materials-handling equipment (fig. 7). Two sets of house tracks accommodate 130 railcars. Team tracks within the market can accommodate an additional 130 railcars. Front truck platform space can accommodate 260 trucks. A holding area provides parking space for 200 trucks and trailers. Additional parking space is provided for 365 automobiles.

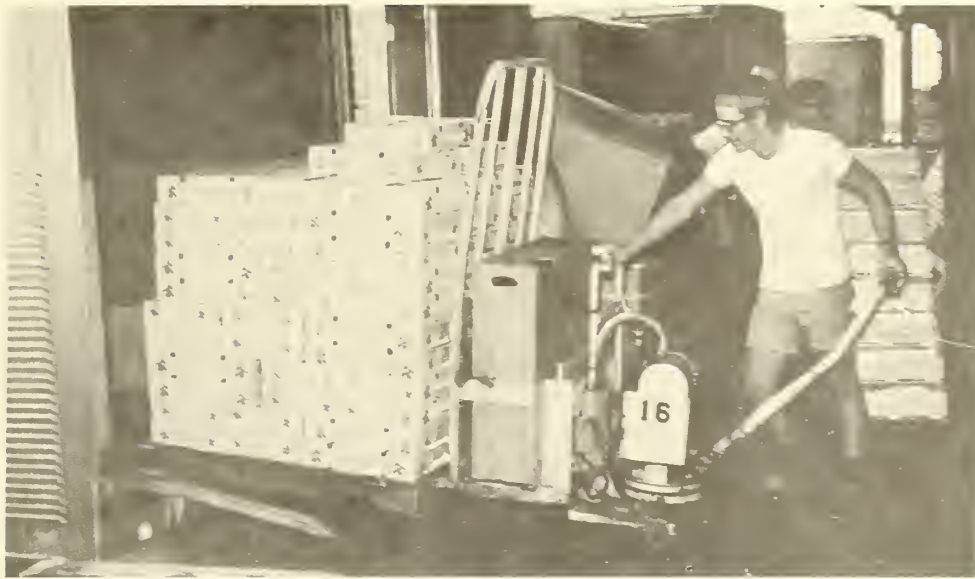


Figure 7.--A battery operated pallet jack loading a palletized shipment.

A roadway 200 feet wide separates the buildings and allows trailer trucks to maneuver and easily back to the loading platforms (fig. 8). The



Figure 8.--Front platform area of the multiple-occupancy buildings.

entire market operating area is paved. Access to the market is by one gate. A chain-link fence surrounds the development, guards are on duty 24 hours, and floodlights provide security for the entire market.

COSTS

This section compares selected operating costs in the old facilities with actual costs of operating in the New England Produce Center. In 1961, 6 of the 10 wholesalers were located on the old Boston Market Terminal; 1 of the 6 and the remaining 4 maintained facilities in the Faneuil Hall-Quincy Market area.

Rent

Wholesale firms contemplating relocation are often seriously concerned about the proposed rent for new facilities. Typically, annual rent and rent per ton of product handled have increased in the new modern facilities because of high costs of land, construction, and interest, and because new facilities initially operate at much less than full capacity.

In 1961 the 10 wholesalers used 48,000 square feet of storage and operating space. In 1970 these same firms used 116,220 square feet of storage and operating space in multiple-occupancy buildings on the New England Produce Center. However, to handle the 1970 volume through the old facilities, an additional 36,400 square feet would have been required for a total of 84,400 square feet. Rental costs to handle the 1970 volume amounted to \$140,135 for the old facilities and \$178,896 for the new, an increase of 28 percent. Total rent paid for the old facilities was \$1.66 per square foot in 1961 and \$1.91 per square foot for new facilities in 1970, an increase of 15 percent. On a cost-per-ton basis, rent was 47 cents per ton for the old facilities and 60 cents for the new facilities, an increase of 28 percent (table 1). Rental costs (ownership cost) for the new facilities were adjusted to reflect the portion of the mortgage payment used to reduce the principal.

Since many of the old wholesale facilities were in very poor condition, rents charged for them were relatively low. Lower rent costs per ton in the old facilities were also due in part to high use of available storage space through the use of narrow aisles, a high degree of hand stacking, and the use of railcars as supplementary storage facilities.

Handling Costs

The most important cost category examined was the cost of handling--including receiving, storing, selecting, and loading operations. These operations are "facility related" in that the facility could affect productivity. Excluded from handling costs as not "facility related" were grading, sorting, and prepackaging.

Table 1.--Business volume and rental costs in old facilities and in new facilities for 10 selected wholesalers relocated to the New England Produce Center

Item	Old facilities	New facilities	Increase or decrease <u>1/</u>
			<u>Percent</u>
Volume, tons-----	<u>2/</u> 170,270	<u>3/</u> 298,160	+ 75
Floorspace, sq ft-----	<u>4/</u> 84,400	116,220	+ 38
Rent per sq ft, dollars---	1.66	1.91	+ 15
Rent per ton, dollars-----	<u>5/</u> .47	<u>6/</u> .60	+ 28
Rent per year at 1970 volume, dollars-----	<u>7/</u> 140,135	<u>8/</u> 178,896	+ 28

- 1/ Rounded to nearest percent.
2/ 1961 volume.
3/ 1970 volume.
4/ Required to handle 1970 volume, original space was 48,000 square feet.
5/ 1961 cost divided by 1961 volume.
6/ 1970 cost divided by 1970 volume.
7/ Rent per ton (1961) times 1970 volume.
8/ Rent per ton (1970) times 1970 volume.

Labor Costs

To determine "in-house" labor costs for either the old or new facilities, the hours required to handle the 1970 volume in the old and new facilities were multiplied by the 1970 wage rate of \$4.21 per hour. 3/ Based on in-house labor requirements of 336,921 man-hours for the old facilities and 161,949 hours for the new facility, in-house labor amounted to \$1,418,437 for the old facilities and \$681,806 for the new.

In addition to the in-house labor, it is a common practice for produce wholesalers to hire temporary labor for unloading railcars as the need arises. The wholesaler is typically charged by the car, rather than by the hour. In 1970 these charges based on \$33 per car or truck would have amounted to \$237,954 for the old facilities and \$63,922 for the new facilities (table 2). The principal reason for the higher cost in the old facilities was due to a higher percentage of produce being unloaded by other than in-house labor.

3/ Includes overtime and fringe benefits.

Table 2.--Annual handling costs in old and new facilities for 10 selected wholesalers relocated on the New England Produce Center

Item	Old facilities	New facilities
	<u>Dollars</u>	<u>Dollars</u>
Labor costs <u>1/</u>		
In-house-----	1,418,437	681,806
Unloading costs <u>2/</u> -----	237,954	63,922
Total labor cost-----	1,656,391	745,728
Labor cost per ton-----	5.56	2.50
Equipment costs----- <u>3/</u>	6,000	<u>4/</u> 40,595
Equipment costs per ton--	.02	.14
Total labor and equipment cost-----	1,662,391	786,323
Total labor and equipment cost per ton <u>5/</u> -----	5.58	2.64
Savings per ton <u>5/</u> -----	---	2.94
Savings percent-----	---	52.7
Savings per year <u>6/</u> -----	---	876,068

1/ At \$4.21 per hour.

2/ Provided by the B.M.T. or by contract labor in the New England Produce Center at \$33 per car or truck.

3/ Estimated.

4/ At \$0.136 per ton.

5/ Rounded to nearest cent.

6/ 1970 volume of 298,160 tons times savings per ton of \$2.94.

Total estimated labor costs for the old facilities amounted to \$1,656,391 or \$5.56 per ton, and for the new facilities \$745,728 or \$2.50 per ton.

Equipment Costs

Another component of handling costs is the cost of materials-handling equipment. The annual costs for the type and amount of equipment used were developed by depreciating the equipment over its useful life and adding interest, insurance and taxes, maintenance, and electrical power costs.

The estimated annual costs for equipment, mostly handtrucks and conveyors, used in the old facilities was \$6,000 annually or \$0.02 per ton.

Equipment used in the new facilities included manually operated and powered palletjacks, forklift trucks, and handtrucks. This cost was \$40,595 annually or \$0.14 per ton.

Total Labor and Equipment Costs

Total labor and equipment costs per ton in the old facilities in 1970 would have amounted to \$5.58 as compared with \$2.64 in the new facilities, a decrease in costs of \$2.94 per ton, a savings of 52.7 percent, or annual savings of \$876,068 for the new facilities.

Inbound Charges and Cartage Costs

Entrance fees, piggyback transfer costs, and cartage costs in 1970 for the old and new facilities are compared in this section.

Cartage represents the cost of transferring products from point of initial receipt to the dealers' facilities. These costs for the old facilities with the points of initial receipt located some distance from the dealers' facilities amounted to \$45.40 per car at 1970 wage rates.

The entrance fees for the old facilities were for rail and truck receipts on the Boston Market Terminal. The dealers were charged \$10 for the railcars delivered to team tracks and \$16 when cars were delivered to house tracks. Trucks were charged \$10 each, which was paid by the shipper. Piggyback was not used extensively during this period, and charges were borne by the railroad.

Entrance fees charged firms located on the New England Produce Center in 1970 were \$10 for railcars, \$6 for piggyback, and \$5 for tractor-trailers. The wholesaler paid the fee for railcar and piggyback receipts, and the shipper paid the truck fee. In addition to the entrance fees, piggyback shipments incurred costs for transferring the loaded trailer from piggyback

receiving facilities in Beacon Park or the Northern Avenue yards to the New England Produce Center. These transfer costs amounted to \$37.50 per unit in 1970.

In computing the costs that would have occurred in the old and the new facilities on the 1970 volume, the net result was a savings of \$14,908 annually in the new facilities. The principal difference was due to approximately \$40,000 in cartage charges in the old facilities, which was partly offset by \$31,000 for piggyback transfer costs in the new facility.

Insurance on Contents

Another saving for the tenants of the New England Produce Center was insurance on building contents. The 1970 cost for insurance was 1.2 cents per ton of product handled. Insurance cost twice this amount in the old facilities--2.4 cents per ton, an increase of \$3,577 annually.

Avoidable Delays

Delays to inbound and outbound trucks in the Faneuil Hall-Quincy Market area amounted to about 30 minutes per vehicle in 1961. Data on delay were not available for firms located in the Boston Market Terminal during this period.

The Faneuil Hall-Quincy Market firms received 4,100 trailer loads in 1970 which would have been subject to about 2,050 hours of delay if they were still operating from their old facilities. Customers picking up merchandise would have encountered 63,800 hours of delay for 127,600 loads. The value of this delay time was estimated to amount to \$333,350 per year based on driver and vehicle cost of \$7 per hour for tractor-trailers and \$5 per hour for customer trucks (table 4). The delays for incoming and outgoing shipments on the New England Produce Center in 1970 were negligible.

Avoidable Spoilage

Another factor to consider is the reduction of avoidable spoilage that has occurred since moving to the New England Produce Center. ^{4/} The 1961 data for the 10 wholesalers did not contain spoilage information for these individual wholesalers. However, data contained in Marketing Research Report No. 732, ^{5/} indicated that avoidable spoilage for dealers in the Faneuil Hall-Quincy area amounted to \$2.97 per ton handled and for South Boston, which included the Boston Market Terminal, spoilage was 39 cents per ton of product handled. If these costs were updated by differences in price levels between 1961 and 1970, they would be \$3.59 and 47 cents, respectively.

^{4/} Avoidable spoilage is defined as spoilage that could have been prevented through improved handling and adequate refrigeration.

^{5/} See footnote three, p. 13.

Table 4.--Estimated value of delays to incoming and outgoing trucks for 5 dealers in the Faneuil Hall-Quincy Market area, 1970

Type of vehicle	Vehicles	Hours per year	Cost per hour	Annual cost
	<u>Number</u>	<u>Hours</u>	<u>Dollars</u>	<u>Dollars</u>
Tractor-trailers-----	4,100	2,050	7.00	14,350
Customer trucks-----	127,600	63,800	5.00	<u>319,000</u>
Total annual cost--	---	---	---	333,350

Since the dealers from the Faneuil Hall-Quincy area handled 140,797 tons of produce in 1970, they would have had avoidable spoilage losses of \$505,461. The dealers from the old Boston Market Terminal handled 157,363 tons, and spoilage would have amounted to \$73,960. Total avoidable spoilage would have amounted to \$579,421 or about 1.2 percent of sales. Avoidable spoilage for the 10 wholesalers on the New England Produce Center in 1970 was negligible.

Demurrage

Some wholesalers stated that demurrage costs in the new market decreased, and others that they were about the same. One firm reported reduced average turnaround time of railcars from 4 days to $2\frac{1}{2}$ days. This was attributed to the ease of consolidating produce from several cars with all cars on house tracks rather than in scattered locations on team tracks.

Other wholesalers stated that demurrage costs for their operation were more a result of merchandising decisions and fluctuating market conditions rather than ease of unloading. Therefore, demurrage costs are not included in the cost comparisons.

CONCLUSIONS

From the data presented, one must conclude that constructing the New England Produce Center was a worthwhile undertaking.

Of the cost categories examined, only rent and handling equipment costs increased in the New England Produce Center as compared with operating in the old facilities. Rent increased \$38,761 and handling equipment \$34,595 annually. Net savings in favor of the new facilities amounted to \$5.93 per ton of produce handled or \$1,768,563 per year (table 5).

Table 5.--Comparison of selected costs of wholesaling and marketing system costs in old and in new facilities

Item	Cost per ton		Annual increase or decrease <u>1/</u>
	Old facilities	New facilities	
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Rent-----	0.470	0.600	38,761
Handling costs:			
Labor-----	5.555	2.501	-910,663
Equipment-----	.020	.136	34,595
Inbound charges and cartage costs-----	.490	.440	- 14,908
Insurance on contents--	.024	.012	- 3,577
Avoidable delays for incoming and outgoing trucks-----	1.118	<u>2/</u>	-333,350
Avoidable spoilage-----	1.943	<u>2/</u>	-579,421
Total per ton-----	9.620	3.689	---
Savings per year-----	---	---	1,768,563
Savings per ton-----	---	5.93	---

1/ Based on 1970 volume of 298,160 tons.

2/ Negligible.

Of the increased costs for the old facilities 81 percent would have resulted in higher operating costs for the wholesalers; 19 percent in higher costs for other parts of the marketing system.

The wholesalers share of these increased costs would be \$4.80 per ton; depending on the type of wholesaler and the services offered, this could amount to as much as 20 percent of the total gross margin. ^{6/} This cost and \$1.13 per ton higher costs for shippers, transportation companies, and retailers in the marketing system, would have resulted in higher costs for wholesalers, retailers, and probably consumers, if the wholesalers had remained in their old facilities.

In the new market, trucking companies, retailers, and buyers picking up produce benefited through reduction of avoidable delays, such as waiting to load or unload, or delays due to congested market conditions. Lower entrance fees for trucks also benefited trucking companies or shippers. A graphic illustration of the data in table 5 is shown in figure 9.

^{6/} Based on a gross margin of 13 percent and wholesale value of one ton of produce at \$180.

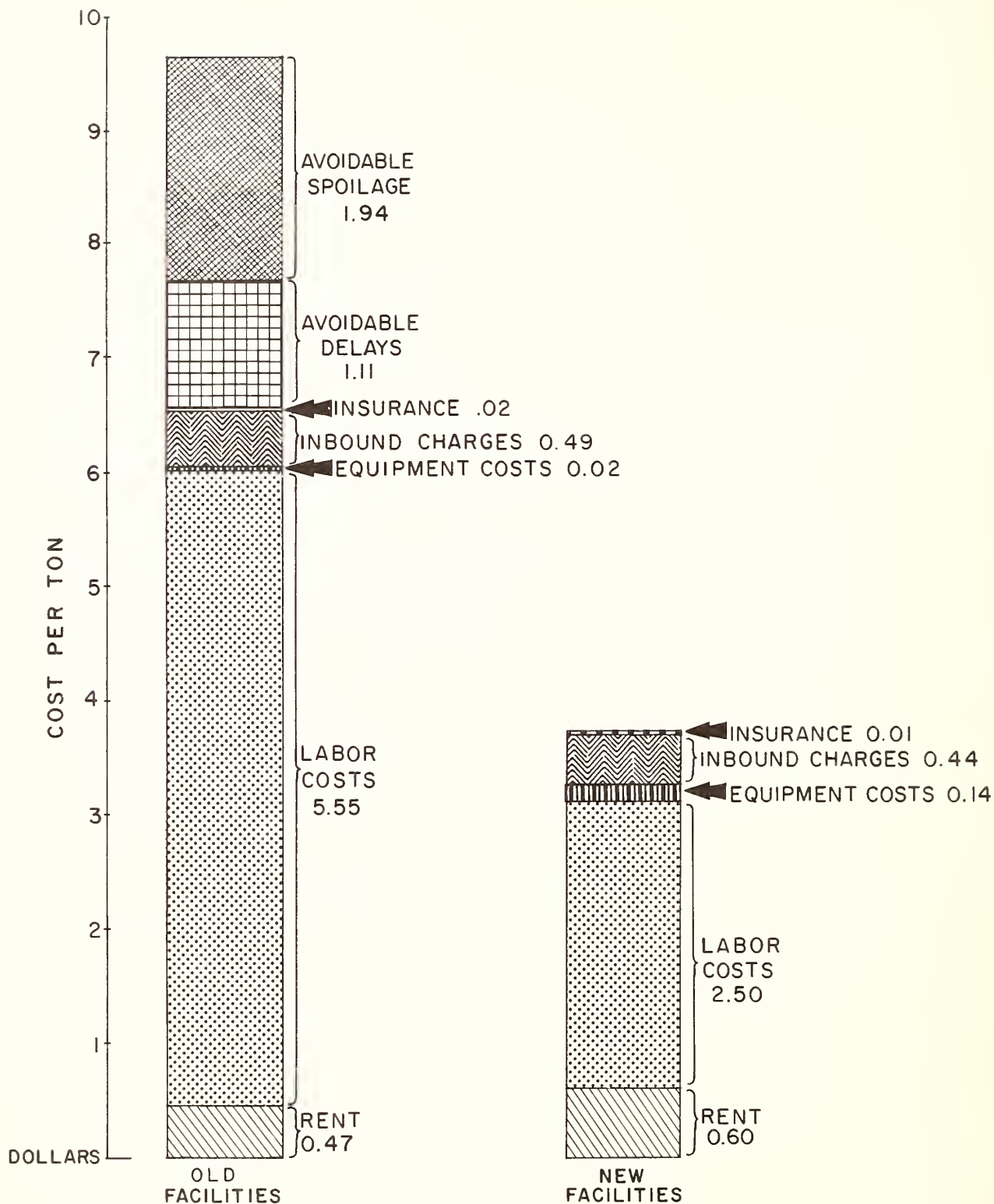


Figure 9.--A comparison of selected marketing costs for handling one ton of produce in old and new facilities

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